

EXTRUDED POLYPROPYLENE SHEETS CONTAINING BETA SPHERULITES

ABSTRACT OF THE DISCLOSURE

An improved extruded polypropylene sheet that contains a high level of beta crystallinity and a process for making such sheets are disclosed herein. The polypropylene sheet contains at least one layer of a resinous polymer of propylene and an effective amount of beta spherulites. The beta spherulites in the sheet are produced by the incorporation of a beta nucleating agent in the polymer. The presence of the beta spherulites in the sheet facilitates the process of post-stretching the perforated sheet to produce a uniaxially or biaxially oriented mesh structure, and also broadens the temperature range over which this stretching can be performed. The final mesh has a lower density than a polypropylene mesh without beta spherulites. The perforated beta nucleated sheet also exhibits different stretching characteristics during the orientation steps such that more resinous polymer is drawn out of the node junction region between the machine direction and transverse direction oriented strands and a greater percentage of the web area has a solid polymer structure. This altered stretching behavior results in an oriented web that has higher strength and torsional rigidity characteristics. Thus lighter weight mesh structures which meet all of the physical property requirements for end-use applications, such as reinforcing grids to stabilize concrete and soil in civil engineering and landfill applications, are produced. The lighter weight extruded beta nucleated sheet can also be stretched at higher line speeds, thereby reducing the manufacturing costs.